

Syllabus Introduction to Statistics for the Social Sciences

Fall 2024

Lecturer: Benjamin E. Schlegel (he/him) – **E-Mail:** kontakt@benjaminschlegel.ch

Lecture time: Wednesday, 12:15 - 16:00 – **Place:** HS 6 / 4.B47 / 4.B55

Goals of the lecture

The goal of this lecture is to provide an introduction to statistics for the social sciences. It is a beginner friendly course and no prior knowledge is required. In the course we will start with an introduction to R and RStudio and data visualization. We then learn how to read in data, how to clean it and how to do exploratory data analysis. Before jumping into inferential statistics, we will learn about probability theory. Afterwards we will start with linear regression and learning the tool of simulation and bootstrap using the linear regression. At the end we learn about Quarto Markdown which you need for the final assignment and an overview of some important models beyond the linear regression.

Assignment

At the end of the course you will have to write a data essay using Quarto Markdown. A data essay is basically a term paper without the need of literature but containing the whole methods and analysis part. More details will be provided at the end of the last lecture.

Deadline for the data essay: January 6, 2025 8am (in the morning!).

Program

- **Week 1 - September 18, 2024 (4.B47):** Organization, Introduction R & RStudio, Data Visualization (Reading: R for Social Scientists, Chapter 1, 2, 4.4)
- **Week 2 - September 25, 2024 (HS 6):** Data Import, Data Cleaning, Exploratory Data Analysis (Reading: R for Social Scientists, Chapter 3, 4.1-4.2)
- **Week 4 - October 9, 2024 (12:15-14:00: 4.B55, 14:15-16:00: HS 6):** Probability Theory, Samples, Central Limit Theorem (Reading: R for Social Scientists, Chapter 4,3)
- **Week 6 - October 23, 2024 (HS 6):** Linear Regression, Causality vs Correlation (Reading: R for Social Scientists, Chapter 6)
- **Week 8 - November 6, 2024 (HS 6):** Simulation & Bootstrap, Writing a simple function in R
- **Week 10 - November 20, 2024 (HS 6):** How to write a term paper using Quarto Markdown, MLE, overview of more complex models (Reading: R for Social Scientists, Chapter 15, 7)
- **Week 12 - December 4, 2024 (HS 6):** More complex models, feedback (Reading: R for Social Scientists, Chapter 8-12 [optional, read when you need it for you data essay or if you are interested in a specific model])